

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1 1. (Currently Amended) A method for managing a data service from a management
2 terminal in a distributed computer system having a host computer system with a
3 lookup service and at least one storage device connected to the host computer
4 system by driver software that does not provide the data service, the method
5 operating without reconfiguring the driver software and comprising:
 - 6 (a) running, in the host, management facade software that ~~receives~~ intercepts
7 data ~~from~~ flowing between the driver software and the storage device and
8 ~~controls how~~ redirects that data ~~passes between the driver software and~~
9 ~~the storage device~~ to a kernel module, which is resident on the host
10 computer system and provides the data service by replicating data on the
11 storage device and at least one other storage volume, and that retrieves
12 attributes of the data service from the kernel module;
 - 13 (b) running, in the host, a federated bean that exports an interface containing
14 methods that generate commands to the management facade;
 - 15 (c) using the lookup service to obtain a proxy to the federated bean; and
16 (d) in response to commands received from the management terminal, using
17 the proxy to make method calls on the federated bean interface to cause
18 the management facade to control the data passing between the driver
19 software and the storage device and to retrieve data service attributes in
20 order to manage the data service.
- 1 2. (Original) The method of claim 1 wherein step (d) comprises using a command
2 line interface in the management terminal to generate the commands.

- 1 3. (Original) The method of claim 1 wherein step (d) comprises using a graphical
2 user interface in the management terminal to generate the commands.
- 1 4. (Previously Presented) The method of claim 1 wherein the storage device is a
2 non-SCSI device and step (a) comprises inserting a SCSI terminal emulation
3 interface layer between the driver software and the storage device, which
4 interface layer makes the storage device appear as a SCSI device.
- 1 5. (Canceled).
- 1 6. (Original) The method of claim 1 wherein the distributed computer system
2 comprises a plurality of host computer systems each having at least one storage
3 device connected to the each host computer system by driver software and step
4 (a) comprises running in each of the plurality of hosts, management facade
5 software that controls data passing between the driver software and the storage
6 device in the each host and that retrieves attributes of the data service; and step
7 (b) comprises running, in each host, a federated bean that exports an interface
8 containing methods that generate commands to the management facade in the
9 each host.
- 1 7. (Original) The method of claim 6 wherein step (c) comprises using the lookup
2 service to obtain a first proxy to a first federated bean in one host computer
3 system and using the first proxy to control the first federated bean retrieve a
4 second proxy of a second federated bean running in a second host.
- 1 8. (Original) The method of claim 7 further comprising:
2 (e) using the second proxy to control the second federated bean from the first
3 host computer system.

1 9. (Currently Amended) Apparatus for managing a data service from a management
2 terminal in a distributed computer system having a host computer system with a
3 lookup service and at least one storage device connected to the host computer
4 system by driver software that does not provide the data service, the apparatus
5 operating without reconfiguring the driver software and comprising:

6 management facade software that runs in the host computer system, that
7 receives intercepts data from flowing between the driver software and the
8 storage device and ~~controls how~~ redirects that data ~~passes between the driver~~
9 ~~software and the storage device~~ to a kernel module, which is resident on the host
10 computer system and provides the data service by replicating data on the
11 storage device and at least one other storage volume, and that retrieves
12 attributes of the data service from the kernel module;

13 a federated bean that runs in the host computer system and exports an
14 interface containing methods that generate commands to the management
15 facade;

16 a mechanism that uses the lookup service to obtain a proxy to the
17 federated bean; and

18 a mechanism that responds to commands received from the management
19 terminal, and that uses the proxy to make method calls on the federated bean
20 interface to cause the management facade to control the data passing between
21 the driver software and the storage device and to retrieve data service attributes
22 in order to manage the data service.

1 10. (Original) The apparatus of claim 9 wherein the mechanism that responds to
2 commands received from the management terminal comprises a command line
3 interface in the management terminal.

1 11. (Original) The apparatus of claim 9 wherein the mechanism that responds to
2 commands received from the management terminal comprises a graphical user
3 interface in the management terminal.

1 12. (Previously Presented) The apparatus of claim 9 wherein the storage device is a
2 non-SCSI device and the management facade software comprises a SCSI
3 terminal emulation interface layer inserted between the driver software and the
4 storage device, which interface layer makes the storage device appear as a
5 SCSI device.

1 13. (Canceled).

1 14. (Original) The apparatus of claim 9 wherein the distributed computer system
2 comprises a plurality of host computer systems each having at least one storage
3 device connected to the each host computer system by driver software and
4 wherein the management facade software comprises management facade
5 software running in each of the plurality of hosts that controls data passing
6 between the driver software and the storage device in the each host and that
7 retrieves attributes of the data service; and wherein a federated bean runs in
8 each host computer system and exports an interface containing methods that
9 generate commands to the management facade in the each host.

1 15. (Original) The apparatus of claim 14 wherein the mechanism that uses the
2 lookup service to obtain a proxy to the federated bean comprises a first
3 mechanism that uses the lookup service to obtain a first proxy to a first federated
4 bean in one host computer system and a second mechanism that uses the first
5 proxy to control the first federated bean retrieve a second proxy of a second
6 federated bean running in a second host.

1 16. (Original) The apparatus of claim 15 further comprising a third mechanism that
2 uses the second proxy to control the second federated bean from the first host
3 computer system.

1 17. (Currently Amended) A computer program product for managing a data service
2 from a management terminal in a distributed computer system having a host
3 computer system with a lookup service and at least one storage device
4 connected to the host computer system by driver software that does not provide
5 the data service, the computer program product operating without reconfiguring
6 the driver software and comprising a computer usable medium having computer
7 readable program code thereon, including:

8 management facade software that runs in the host computer system, that
9 receives intercepts data from flowing between the driver software and the
10 storage device and ~~controls how~~ redirects that data ~~passes between the driver~~
11 ~~software and the storage device~~ to a kernel module, which is resident on the host
12 computer system and provides the data service by replicating data on the
13 storage device and at least one other storage volume, and that retrieves
14 attributes of the data service from the kernel module;

15 federated bean program code that can run in the host computer system
16 and that exports an interface containing methods that generate commands to the
17 management facade;

18 program code that uses the lookup service to obtain a proxy to the
19 federated bean program code; and

20 program code that responds to commands received from the management
21 terminal and uses the proxy to make method calls on the federated bean
22 interface to cause the management facade to control the data passing between
23 the driver software and the storage device and to retrieve data service attributes
24 in order to manage the data service.

1 18. (Original) The computer program product of claim 17 wherein the program code
2 that uses the proxy to make method calls on the federated bean interface
3 comprises a command line interface in the management terminal.

- 1 19. (Original) The computer program product of claim 17 wherein the program code
2 that uses the proxy to make method calls on the federated bean interface
3 comprises a graphical user interface in the management terminal.
- 1 20. (Original) The computer program product of claim 17 wherein the distributed
2 computer system comprises a plurality of host computer systems each having at
3 least one storage device connected to the each host computer system by driver
4 software and the management facade software comprises management facade
5 software running in each of the plurality of hosts that controls data passing
6 between the driver software and the storage device in the each host and that
7 retrieves attributes of the data service; and wherein a federated bean runs in
8 each host and exports an interface containing methods that generate commands
9 to the management facade in the each host.
- 1 21. (Original) The computer program product of claim 20 wherein the program code
2 that uses the lookup service to obtain a proxy to the federated bean program
3 code comprises program code that uses the lookup service to obtain a first proxy
4 to a first federated bean in one host computer system and using the first proxy to
5 control the first federated bean retrieve a second proxy of a second federated
6 bean running in a second host.
- 1 22. (Original) The computer program product of claim 21 further comprising program
2 code that uses the second proxy to control the second federated bean from the
3 first host computer system.
- 1 23. (Currently Amended) Apparatus for managing a data service from a management
2 terminal in a distributed computer system having a host computer system with a
3 lookup service and at least one storage device connected to the host computer
4 system by driver software that does not provide the data service, the apparatus
5 operating without reconfiguring the driver software and comprising:

6 means operable in the host computer system, for receiving intercepting
7 data from flowing between the driver software and the storage device and
8 controlling how redirecting that data ~~passes between the driver software and the~~
9 ~~storage device~~ to a kernel module, which is resident on the host computer
10 system and provides the data service by replicating data on the storage device
11 and at least one other storage volume, and retrieving attributes of the data
12 service from the kernel module;

13 federated bean means operable in the host computer system for exporting
14 an interface containing methods that generate commands to the management
15 facade;

16 means for using the lookup service to obtain a proxy to the federated
17 bean; and

18 means responsive to commands received from the management terminal,
19 for using the proxy to make method calls on the federated bean interface to
20 cause the management facade to control the data passing between the driver
21 software and the storage device and to retrieve data service attributes in order to
22 manage the data service.

- 1 24. (Original) The apparatus of claim 23 wherein the distributed computer system
2 comprises a plurality of host computer systems each having at least one storage
3 device connected to the each host computer system by driver software and
4 wherein the means operable in the host computer system, for controlling data
5 passing between the driver software and the storage device comprises means
6 running in each of the plurality of hosts for controlling data passing between the
7 driver software and the storage device in the each host and that retrieves
8 attributes of the data service; and wherein a federated bean means runs in each
9 host computer system for exporting an interface containing methods that
10 generate commands to the management facade in the each host.

1 25. (Original) The apparatus of claim 24 wherein the means for using the lookup
2 service to obtain a proxy to the federated bean comprises first means for using
3 the lookup service to obtain a first proxy to a first federated bean in one host
4 computer system and second means for using the first proxy to control the first
5 federated bean retrieve a second proxy of a second federated bean running in a
6 second host.

1 26. (Original) The apparatus of claim 25 further comprising third means for using the
2 second proxy to control the second federated bean from the first host computer
3 system.